

REMARKS

Formal Matters

Applicants thank the Examiner for acknowledging the Applicants' claim to foreign priority and receipt of a certified copy of the priority document. Applicants also thank the Examiner for considering the references cited in the Information Disclosure Statement filed on June 14, 2004.

Claims

Claims 1-13 have been examined. By this Amendment, Applicants add new claims 14-25 which are supported by *at least* page 25, line 2 to page 26, line 13 of the specification. Therefore, claims 1-25 are all the claims pending in the application.

Further, by this Amendment, Applicants amend claims 1, 11, 12, and 13 to better conform them with U.S. patent practice. Applicants respectfully submit that the amendments to these claims, however, do not narrow the literal scope of the claims and thus do not implicate an estoppel in the application of the doctrine of equivalents.

Claim Objections

Claim 1 is objected to due to a minor informality. In view of the amendment to claim 1, Applicants respectfully submit that the informality noted by the Examiner has been corrected. Accordingly, Applicants respectfully request the Examiner to withdraw the claim objection.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1-7, and 11-13

Claims 1-7, and 11-13 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,072,304 to Abe *et al.* ("Abe") in view of U.S. Patent No.

5,818,610 to Bromley *et al.* ("Bromley")¹. For *at least* the following reasons, Applicants respectfully traverse the rejection.

Applicants submit that claim 1 is patentable over Abe, Bromley, or any conceivable combination thereof. For example, claim 1 recites an imaging head unit comprising, *inter alia*, a plurality of imaging heads. The *pixel update timings of the imaging heads are alterable* in at least the scanning direction for the individual imaging heads.

The Examiner admits that Abe does not disclose the above-noted features of claim 1. The Examiner, however, alleges that Bromley makes up for the deficient teachings of Abe. In particular, the Examiner contends that col. 3, lines 41-47 of Bromley discloses an imaging unit wherein *the pixel update timings of the imaging heads are alterable*. Applicants respectfully submit that the Examiner is misapplying the teachings of the references.

In the cited portion of Bromley, a configuration of a scanner frame 20 is described. In particular, in this portion, Bromley discloses that a scanner 36 attached to a sliding carrier 34 travels along a vertical track 22 of the scanner frame 20. The scanner 36 is a charged coupled device (CCD) that reads a 1x1680 pixel area to provide a continuous video output indicative of the area read when traveling along the vertical track 22 (*see* Bromley: figure 1, col. 3, lines 42-47). However, nowhere in this portion of Bromley is there any disclosure or suggestion of *pixel update timings* of the scanner 36, let alone that the *pixel update timings* of the scanner 36 are *alterable*. The teachings of Bromley are completely irrelevant with respect to the above-noted feature of claim 1.

¹ Applicants note that although claim 13 is not listed in the statement of rejection (Office Action, page 2, paragraph 2), portions of Abe and Bromley are applied in the rejection of claim 13 on page 7 of the Office Action.

Moreover, Applicants respectfully submit that Bromley is altogether silent regarding *alteration of any pixel update timings* during the scanning process. At most, Bromley discloses that a time period between a pair of pulses 114 is calculated when the sensors detect printed bars 38 and 42 on marker strips 37 and 41, respectively (Bromley, figure 4, and col. 5, line 65 to col. 6, line 16). The time period is calculated to predict the period between the next pair of pulses 114. However, this calculated time period is used to determine whether the scanner 36 is moving faster than it can scan, and an alarm is triggered when such a scenario is detected (Bromley, col. 6, lines 30-39). As such, Bromley does not disclose or even remotely suggest that pixel update timings of the scanner 36 are alterable. Instead, it appears that the scanning speed of the scanner 36 is adjusted based on the calculated time period.

In light of the discussion above, Applicants respectfully submit that Abe and Bromley, alone or in combination, do not disclose, teach, or suggest an imaging head unit wherein the *pixel update timings of the imaging heads are alterable* in at least the scanning direction for the individual imaging heads. Therefore, Applicants respectfully request the Examiner to withdraw the 35 U.S.C. § 103(a) rejection of claim 1.

Claims 2-7 and 12 are patentable *at least* by virtue of their dependency on claim 1. However, Applicants respectfully submit that claims 2-3 are patentable for reasons other than their dependency.

For example, claim 2 recites that each imaging head comprises a plurality of imaging elements, and the *alteration of a pixel update timing* is implemented by *altering an imaging timing* by a duration which is *determined by a ratio between a spacing error* of an imaging element in the scanning direction *and a scanning speed*.

The Examiner again cites col. 3, lines 41-47 of Bromley (the same portion of Bromley relied upon to reject claim 1) contending that the cited portion discloses the features of claim 2. Applicants respectfully disagree.

As discussed above with respect to claim 1, the portion cited by the Examiner is altogether silent regarding any alteration of a timing parameter during a scanning process. Moreover, Bromley does not disclose any ratio that is used to alter an imaging timing, let alone a ratio between a spacing error of an imaging element in the scanning direction and a scanning speed. Bromley, in its description of figure 5 in col. 6, line 48 to col. 7, line 5 states that:

“Each series of bars is read by a separate photosensor. More specifically, for marker strip 41 bars 118 are read by photosensor 52 and bars 120 are read by photosensor 54 and for marker strip 37 bars 118 are read by photosensor 76 and bars 120 are read by photosensor 78. It is important that each photosensor pair be in alignment, i.e., photosensor pair 52, 54, photosensor pair 76, 78, with the makers. Accordingly depending on which bar 118 or 120 is detected next by the corresponding photosensor, the direction of travel will be known. It will be appreciated that this applies to both vertical (marker strip 41) and horizontal (marker strip 37) travel. Only one of these bars, in this example bars 120, for each of the marker strips is used to determine scanner 36 position (i.e., distance) relative to the origin, (x=0, y=0)” (emphasis added).

As described above, the detection of bar 118 or 120 determines the direction of travel and is used for alignment purposes. As an initial matter, Applicants submit that the bars 118 or 120 are not imaging elements. Moreover, the imaging timing is not altered by a duration determined by a ratio as set forth in claim 2.

Therefore, Applicants respectfully submit that claim 2 is patentable over the combination of Abe and Bromley and request the Examiner to withdraw the rejection of claim 2.

Claim 3 recites that the alteration of the imaging timing is implemented by retarding the imaging timing. The Examiner contends that Abe, in col. 5, lines 48-51 discloses this feature. Applicants respectfully submit that the Examiner is misinterpreting the teachings of Abe.

For instance, the cited portion describes a timing chart illustrating a normal recording mode of operation (Abe, col. 5, lines 41-43). There is no alteration of imaging timing during the normal recording mode. The operations with respect to the timings 52, 53, 55, etc. are all predetermined since it is in a normal recording mode, and Abe does not disclose or suggest that these timings are altered in any way (Abe, figure 5).

As such, Applicants respectfully submit that neither Abe nor Bromley disclose the features of claim 3.

Claim 11 recites an imaging device comprising, *inter alia*, an imaging head unit including a plurality of imaging heads, and *pixel update timings of the imaging heads are alterable* in at least the scanning direction for the individual imaging heads. Therefore, Applicants respectfully submit that claim 11 is patentable for *at least* reasons similar to those given above with respect to claim 1.

Claim 13 recites an imaging method which employs an imaging head unit, the method comprising, *inter alia*, *altering pixel update timings* for individual imaging heads. Therefore, Applicants respectfully submit that claim 13 is patentable for *at least* reasons similar to those given above with respect to claim 1.

Further, Applicants note that the Examiner incorrectly alleges on page 7 of the Office Action that Bromley discloses all the features of claim 13, although portions of Abe (col. 4, lines 18-24) are cited in the rejection. Applicants respectfully request the Examiner to clarify his position regarding the rejection of claim 13.

Claim 8

Claim 8 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Abe in view of Bromley, and further in view of U.S. Patent No. 5,993,183 to Enomotto *et al.*

(“Enomotto”). For *at least* the following reasons, Applicants respectfully traverse the rejection.

Claim 8 depends from claim 1. Since Enomotto does not cure the deficient teachings of Abe and Bromley with respect to claim 1, Applicants respectfully submit that claim 8 is patentable *at least* by virtue of its dependency.

Claim 9

Claim 9 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the combination of Abe, Bromley, and Enomotto, and further in view of U.S. Patent No. 6,900,825 to Kito (“Kito”). For *at least* the following reasons, Applicants respectfully traverse the rejection.

Claim 9 depends from claim 1. Since Kito does not cure the deficient teachings of Abe and Bromley with respect to claim 1, Applicants respectfully submit that claim 9 is patentable *at least* by virtue of its dependency.

Claim 10

Claim 10 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the combination of Abe, Bromley, Enomotto, and Kito and further in view of U.S. Patent No. 6,133,986 to Johnson (“Johnson”). For *at least* the following reasons, Applicants respectfully traverse the rejection.

Claim 10 depends from claim 1. Since Johnson does not cure the deficient teachings of Abe and Bromley with respect to claim 1, Applicants respectfully submit that claim 10 is patentable *at least* by virtue of its dependency.

New Claims


Applicants respectfully submit that new claims 14-25 are patentable *at least* by virtue of their dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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